Introduction

Standards and guidelines such as the FGI Design Guide for the Built Environment of Behavioral Health Facilities are excellent resources to illuminate best practices. As part of a robust and comprehensive patient-safety risk assessment in pre-project planning, it is important to weigh the level of precaution necessary to reduce the risk of patient self-harm.

The design challenge faced is in balancing patient safety without negatively impacting the creation of a therapeutic environment that is conducive to patient healing and recovery. Nonetheless, as the data shows, the preponderance of inpatient suicide by hanging is an area requiring increased focus and action.

No product can or should claim to be “suicide proof.” That said, ligature-resistant products and systems can hopefully reduce the incidence of self harm.

Mental Illness and the Need for Inpatient Capacity

The umbrella of MH treatment continues expanding to include more conditions needing intervention beyond the traditional diagnoses of neuroses, psychoses and schizophrenia. The broadened definition includes:

- Depression and anxiety
- Bipolar and other brain disorders
- Substance and other addictions
- Eating disorders
- Adolescent issues, including increasing diagnoses on the autism spectrum

Mental Health (MH) treatment has moved into a much more prevalent position in the psyche of both provider networks and the federal government. The view now is to integrate MH into a “continuum of healthcare” model - that is, treating both the mind and the body.

Distributed/community-based outpatient MH treatment has received the lion’s share of focus and funding, and follows the overall trend in healthcare to out-migrate services to smaller, focused facilities. However, this approach did not address or under-served patients with chronic mental illness who need an inpatient alternative.

Medicaid broke with almost a half century of past practice by allowing stand-alone psychiatric hospitals into its provider networks. This move is a victory for mental health advocates who sought parity for behavioral health treatment, previously pursued by pushing treatment into clinics and community settings.

One challenge to overall integration is that MH treatment is “… overwhelmingly dominated by small providers with no national footprint.”
There is also an indication that the fragmented mental-health delivery industry may be ripe for consolidation. A report by the major accounting firm BDO states:

“... the behavioral health market is fragmented and overwhelmingly dominated by small providers with no national footprint. By some estimates, only a small fraction of mental healthcare is delivered by large national providers. Private equity-based roll-ups of smaller providers therefore may be able to drive significant economies of scale, resulting in both clinical and administrative standardization. In other areas of the healthcare market, such standardization has resulted in improved health outcomes and decreased costs.”

As healthcare providers, networks and insurers have grappled with healthcare reform, the industry is struggling to rein in costs. In 2011, one behavioral health industry executive boldly predicted: Fewer and bigger companies. Further, this executive stated that integrated systems are perceived to be more-efficient, and cautioned that behavioral health can’t stand apart; it needs to be integrated into the delivery system.

The outmigration of behavioral health virtually mirrors physical healthcare, being driven by the following:

- New developments in reimbursement that support outpatient treatment
- Changes in the preferred care delivery model for patients with behavioral health disorders
- Advances in screening and diagnosis that identify more patients early on

The earlier diagnosis of mental health disorders indicates a shift to more-rapid intervention to avoid having to “institutionalize” (admit) patients, and thus avoid the stigma associated with such admissions.

**Systemic shortfalls that may hamper growth**

Several factors may impact the speed of change in MH treatment:

According to the American Hospital Association, by 2030, analysts predict that, if no workforce changes are made and other trends continue, that there will be only one geriatric psychiatrist for every 6,000 older Americans with mental illness and substance abuse issues. Furthermore, the U.S. Bureau of Health Professions estimates that, in 2020, 12,624 child and adolescent psychiatrists will be needed, far exceeding the projected supply of 8,313.

Modern Healthcare magazine reports that the transformation [to community-based treatment] has been uneven ... with tragic consequences for the nation's 9 million most severely mentally ill. As states closed their psychiatric hospitals, federal financing for community centers—the presumed alternative—was slashed. Public policy and healthcare experts cite that lack of community investment as a major reason why a high percentage of mentally ill individuals wind up in homeless shelters and prisons.
At the same time, community hospitals, which are eligible to receive Medicaid payment for adult psychiatric hospitalizations, began seeing a stream of mentally ill people in their emergency departments. Many added licensed psychiatric beds to treat them. But acute-care hospital capacity was never enough. It created widespread “boarding” of psychiatric patients in emergency departments because no beds were available.

And the capacity problem is not just a U.S. issue. According to the World Health Organization:

- More than 450 million across the globe suffer from mental illnesses.
- By 2030, depression will be the second highest cause of disease burden in middle-income countries and the third highest in low-income countries. [WHO]
- In developed countries roughly 50 percent of people don’t receive appropriate care for mental disorders but that, in developing countries, the treatment gap rockets sky-high to 90 percent.

Also according to WHO, the European region leads in MH inpatient capacity at 45.8 beds per 100,000 in population. Seems the Europeans may have gotten a large jump on inpatient intervention and housing.

**The Risk of Self Harm**

We now turn our attention to the worst-case scenario ... patients who intend to harm themselves. We realize some of this information may be disturbing, but we need to address it in order to understand how design of the built treatment space may help to reduce the risk.

The darker side comes into view when contemplating the incidence of self-harm and suicide. A 2008 Natl. Institutes of Health study titled “Suicide in the Medical Setting” reported that the approximate number of inpatient suicides is 1,800 annually, but pointed to a gap in data gathering:

Little is known about suicide in the hospital setting. Although suicide is a major public health concern, the literature on suicide in the medical setting is limited, and accurate data on hospital-based suicides are unavailable.

A review of the methods of attempted - and successful - suicides illuminates the types of self harm patients engage in, which in turn may point to possible design elements to reduce risk.
A 2012 presentation by Peter Mills, Ph.D., addressed inpatient suicides in VA hospitals. Some key facts Dr. Mills shared were:

- Inpatient suicide rates estimated to be 5-80 per 100,000 psychiatric admissions in U.S.
- Physical environment a root cause in 84% of Joint Commission (JC) sentinel event inpatient suicides.
- Hanging is the most common method reported in JC (75%) literature and in the VA (30.4%).
- 50% of suicides by hanging were NOT fully suspended - using anchor points below the head.

It is also significant to note that cutting ranks second overall and in the number of attempts made.

As one article said:

While all behavioral health patients are not suicidal, inpatient suicides are a continuing area of concern. Moreover, the rates are not declining despite concerted efforts to reduce them.

**Assessing the Risk in Each Mental Health Space**

As we had stated earlier, the umbrella of behavioral health conditions is getting larger as more and more mental health-related problems are being brought under treatment.

In the same way, when considering design of the behavioral health facility, it is important to think beyond only those spaces designed to house the severely mentally ill. As we can see from this list, each category has unique characteristics as to the type of treatment required, and those locations will vary accordingly. To put it plainly, most mental health patients will continue to be treated in outpatient and/or group settings, with inpatient options being employed only for those needing more-direct intervention or protection from themselves and others.

Taking into account the age, mental and physical condition, and treatment course needed of the patients within the space will then impact the risk assessment and the subsequent design decisions made.
Assembling the Project Team

It takes a team ...

Just as occurs within sustainable design and construction planning, a charrette of all the key players can bring to light and work through:

- Best practices
- Risks
- Innovative designs that lead to greater healing
- Factors in patient and staff safety

among many others.

Contractors need to be brought into the loop - especially in renovation projects - where a patient population may still reside in or utilize other sections of a mental health facility or campus. For example, trade laborers need to keep track of all tools and hardware used, and totally remove all items at the end of each workday so as to remove a potential source of self harm or harm to others.

An excellent resource we found is the Design Guide for the Built Environment of Behavioral Health Facilities. It states up front its main emphasis is on the general adult inpatient behavioral health care unit.

Updated in the spring of each year the Guide offers excellent information and augments regulatory requirements to detail practical means of protecting patients and staff.

One tool within the Guide that we found particularly insightful and helpful is the Hunt/Sine Patient Safety Risk Assessment, or SRA.

The SRA was designed to
facilitate the conversation between clinical staff and designers regarding patient safety. The SRA matrix considers the opportunity for the patient to be alone in a particular space on the one axis, and a level of risk of self-harm on the other axis.

We also offer here an additional resource you may wish to consider: The Center for Healthcare Design’s Safety Risk Assessment Toolkit, or SRA. While the SRA was developed to serve the broader scope of healthcare facilities, it is a good guide to help drive both discussion and planning with clinicians and facility management.

**Spaces to Consider**

**The admissions area** makes the first impression. The goal here and throughout the facility is to appear comfortable and home-like while avoiding a prison-like institutional character. The exception here are emergency admissions, which usually take place at night or on weekends and should not take place on an inpatient unit. The goal is to avoid disrupting other patients on the unit and the patients being admitted themselves. Emergency admission space should be sized large enough to allow several staff to physically manage the patient if necessary.

**Nurse’s stations** should provide the least possible barrier between staff and patients, while striking a balance with staff safety concerns. HIPAA also comes into play here as patient information and records - electronic and otherwise - need to be protected from view.

**Informal patient gathering areas** near nurse’s stations should be considered since they are a natural congregation point allowing patients to socialize. The same guidelines of “comfortable and home-like” should drive the design of formal gathering spaces as well, such as patient lounges, activity rooms and dining areas.

**The dispensing of medication** has evolved from patients lining up at a single window at a designated time to a more distributed approach of staff taking meds to patients in their unit at times throughout the day. Note that some organizations still prefer a single-point medication room, if for no other reason than it facilitates securing meds. The sizing of the medication management space or spaces should take into account the number of staff manning the space, as well as the storage of medications carts.
**Private Patient Rooms** - Per the 2014 Facilities Guideline Institute Guidelines for Healthcare facilities, private patient rooms require 100 net usable square feet for private rooms and 80 net usable square feet for semi-private rooms. As for fixtures, finishes and furnishing for both patient rooms and bathrooms, we will simply refer you to the exhaustive list found in the Design Guide for the Built Environment of Behavioral Health Facilities, published by the FGI.

**Seclusion Rooms** - the mindset among practitioners is shifting regarding the use of rooms designated for seclusion or isolation of patients. The prevalent thinking is that seclusion, which can also include restraint, should be employed for only a limited amount of time and only to ensure the physical safety of the individual, other patients or staff members; and only when less-restrictive measures have proven ineffective.

**Key Design Considerations**

We'll now look at three key considerations that need to be addressed in designing behavioral health spaces.

- Patient and Staff Safety
- Dignity
- Durability

**Safety**

As the VA statistics show, suicide attempts by hanging are the number 1 risk. Webster defines a ligature as “something that is used to bind.” In the case of suicide attempts, ligatures run the gamut from leather and bathrobe belts to shoelaces to drapery cords to wires. Sadly, whatever the mind can conceive has been likely used for self-harm.

Again, we realize this topic can be disturbing or downright upsetting. But, the risks here are real. Therefore, ligature resistance must be foremost in the designer’s mind.

Now we must also clearly state no product should ever claim to be “suicide proof” nor “anti-ligature” because a determined actor can and will make every effort to thwart the preventative measure. However, the designer should seek out both design and product elements that reduce the risk.

As we just covered in the previous section, it is incumbent on the design team - in concert with the caregivers - to determine the appropriate design features and furnishings that will enhance patient safety by reducing or denying the opportunity for patients to harm themselves or others.
One aspect many may not consider is access to contraband — which can range from cached foods, to drugs, to weapons or items that can be turned into weapons. The design team must keep in mind that patients will find places to hide items they may not be allowed to have. Minimizing places to cache such items enhances overall safety and the therapeutic outcome.

Dignity

**Residential & Restorative** - Rather than treating all patients the same in large institutional settings, healthcare providers and systems are moving toward smaller-scale settings that address the individual’s needs in the recovery process. The days of large “wards” to house behavioral health patients are waning in favor of smaller residences, which reduce isolation and create more natural and restorative environments.

Facilities incorporating homelike features better accommodate patients and their families in a soothing setting that lowers stress, promotes safety and improves outcomes. Finishes and furnishings to consider are:

- Hardwood floors
- Lounge furniture
- Carpeted bedrooms with operable windows
- Community kitchen with breakfast bar
- Other amenities like expansive views, quiet rooms, and a library
**Daylighting** - We’ve know from its inception that the LEED rating system encourages the use of daylighting to improve an occupant’s mood and productivity. There is also evidence that daylight can improve outcomes for mental health patients. One study found that daylight had a positive impact on reducing the length of inpatient stays for bipolar patients. In the study, 174 patients with clinical depression were assigned to either sunlit or dimly lit rooms. Patient stays in the sunny rooms were an average of 16.9 days versus 19.5 days in the dimly lit rooms.

**Artwork & Color** - There have been studies that indicate that the use of realistic art can be beneficial in behavioral health settings to reduce patient anxiety and agitation. Results showed that medication dispensed for anxiety and agitation was significantly lower on days when a realistic image of a landscape was displayed. In addition to better outcomes for patients, the cost of medication was compared for the different conditions, establishing a potential financial case for the annual cost savings of $4,000 to $27,000.

In an interesting side note: In a report published by the Coalition for Health Environments Research called “Color in Healthcare Environments,” the effect of color on health care environments was found to be limited. Despite numerous studies on color, there is no evidence to support a one-to-one relationship between a given color and a given emotional response. Although studies show a mood-color association, there is no evidence of colors being emotional triggers. Individual responses to color vary and are influenced by their culture and physiological and psychological makeup. That said, the trend in behavioral health design is toward the use of brighter, more optimistic color palettes and away from those that are more neutral.

**Biophilic Design & Green Space** - Over the span of history, humans have developed an affinity for the life-supporting aspects of the natural world. This attraction to nature is referred to as Biophilia, literally meaning “love of nature.”

Utilizing nature as a healing distraction benefits all ages of patients. By allowing the lines between interior and exterior to blur, the benefits of the outdoors can be brought inside.
Similarly, accessible outdoor spaces that carefully address safety concerns can be calming, positive and therapeutic distractions.

**Durability**

Just as the design team will assess the risk to patients in each space, they also must develop a clear understanding of how abusive each population might be. For example, the construction of each piece of furniture is important. The first step is to find pieces that are well-crafted with durable materials that can be cleaned easily. The next step is to consider safety. Each piece should be inspected closely for any sharp edges, removable panels, metal hooks or anything that could be used as a ligature point. It is imperative to check with manufacturers to make sure that nails are not used in the construction of a furniture piece, even if the nails are not visible when the piece is finished. All bottoms should be finished with tamper-resistant screws and sealed. Fabric or fabric mesh shouldn’t be used as a cover. It also is a good idea to avoid crevices where contraband can be hidden.

Beyond durable paints, walls can be protected in other ways, too, and the aesthetics vary with each product type. Many patients try to pick away at materials where seams are visible, so a good installation would be one in which seams are not easily noticed or can be camouflaged within the product. Long lengths of walls cannot always be seamless. A simple solution could be high-impact wall protection, which comes in a variety of patterns and textures, as a wainscot or an entire wall covering. New digitally printed wall cladding can introduce calming art. Edges can be sealed with pick-proof or tamper-resistant sealants to help prevent patients from pulling them away from walls.

**Product Selections for Behavioral Health**

We now will look at several interior product options that help address the key considerations of Safety, Dignity and Durability. Ideally, the best product choices help deliver on all three.

**Digital Wall Art & Cladding**

We have already discussed how the introduction of biophilic elements into the care setting can have a calming effect and speed healing. Now, imagine turning nature scenes into whole-wall imagery.
Digital wall cladding combines high resolution images with durable wall protection. The beauty of the product is in the unlimited options available to the designer.

Wall Panel Systems

Wall panel systems look like wood but stands up to damage. Ideal for high traffic areas, these systems come in two options:

- Beveled and square profile full wrap panels
- Square edge panels with trim

Some wall panel systems offer the option of incorporating white boards.
Ligature-resistant Handrails

Some facilities may need to accommodate behavioral health patients who have medical needs as well. It important, then, to make sure any handrail design denies the ability to attach some sort of ligature. A continuous bracket handrail denies an attachment point while providing weight support for the patient.

Pop-out Curtain Carrier

In certain settings, especially during renovations where reconfiguration of bathing facilities may not be feasible, the use of shower curtains with pop-out carriers could provide a solution.

We will note here that privacy and shower curtains should be considered only for spaces under constant staff supervision as required by Level 1 on the Hunt/Sine Matrix.

The VA Design Guide does grant that shower curtains may be necessary to reduce water overspray and slip fall risk.

New York State Office of Mental Health cautions on the additive weight that could happen if curtains are bunched.
Solid Surface Shower Surrounds

A concern among mental health facility personnel is the ability of patients to chip out and “weaponize” ceramic tile by fashioning sharp edges to harm either themselves or facility staff. As shown here at the behavioral health unit at St. Anthony Hospital in Oklahoma City, the installation of solid surface wall cladding as a surround and a solid surface receptor greatly reduces the “tile-as-weapon” risk.

As you can also see, the St. Anthony design included plumbing fixtures that minimize attachment points as much as possible. One other benefit of solid surface over tile is in facility cleanliness, with no grout to harbor mold, mildew or bacteria.

Other Bathing Accessories

Solid Surface receptors are extremely durable, and can stand up to vandalism and attempts at destruction.

Ligature-resistant grab bars feature a steel plate welded under the grab bar to eliminate an attachment point.

Tamper resistant drains are secured with screws, and features a stainless steel strainer, along with fiber and rubber gaskets for a tight seal.
Roller Shades

The benefits of roller shade lie in the ability to take advantage of daylighting and control heat gain, while still allowing for outdoor view depending on the fabric’s openness pattern. In addition, allowing patients to adjust the level of light or brightness increases their sense of control.

It is important to select shades specifically manufactured for use in behavioral facilities. They feature:

- Enclosed security roller boxes
- Cordless operation
- Locking devices that resist tampering by patients

On this last point, cordless roller shades can be much more cost-effective and offer lower maintenance than encased blinds.

Printed Roller Shades

Again, the introduction of nature scenes has a benefit of reducing patient stress. An additional benefit of healing window treatments is that they reduce destruction where framed artwork is not allowed. We’ve been told by administrators at several behavioral health facilities that patients tend to not vandalize window shades in spaces where printed shades were installed. Patients appreciated the printed images and were less likely to damage or destroy them.
**Wicket Door**

The door-within-a-door (sometimes referred to as a “wicket” door) has a portion of the center of the door hinged to swing into the corridor. This hinged panel is mounted on a continuous (or concealed) hinge, and the panel is secured with a deadbolt lock.

**Conclusion**

The expanding definition of mental health, the market forces at play, the shortfalls in inpatient capacity, and increased federal funding all point to an expansion of behavioral health facilities. In approaching design, it’s important to grasp the types and incidence of self harm in healthcare settings, and engage in formal risk assessment to develop design strategies for the behavioral health built space.

Gone are the days of the sterile “psych ward,” which is thankfully being replaced by warm, residential-like spaces that focus on safety and patient dignity. There are numerous product choices that help meet the designer’s vision while delivering longer-lasting durability and reduced risk of self harm.
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